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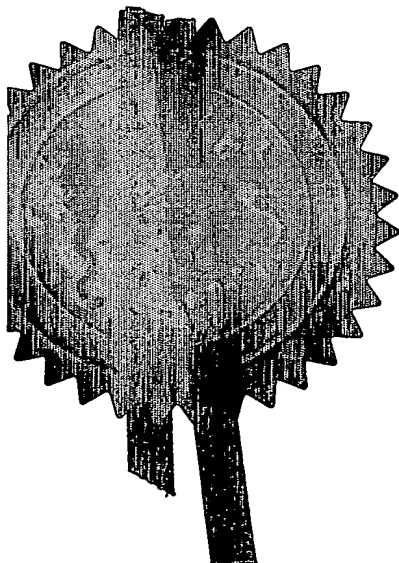
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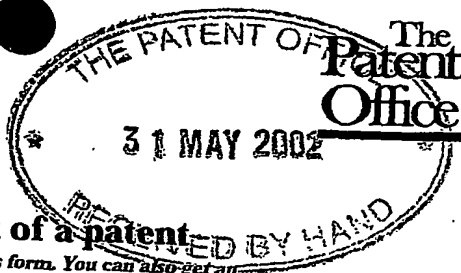
GB0212710.8

By virtue of a direction given under Section 30 of the Patents Act 1977, the application is proceeding in the name of

PRESSO LIMITED,
2 Huntsworth Mews,
LONDON,
NW1 6DD,
United Kingdom

Incorporated in the United Kingdom,

[ADP No. 08438806001]



1/77

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1. Your reference **24464**

2. Patent application number **0212710.8**
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UN02 E723168-4 D00754
/7700 0.00-0212710.8

3. Full name, address and postcode of the or of each applicant (underline all surnames)
Therefore Limited
2 Huntsworth Mews
London NW1 6DD

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation **United Kingdom**

SECTION 30 (1977 ACT) APPLICATION FILED
24/7/

4. Title of the invention **Apparatus For Making Espresso Coffee**

5. Name of your agent (if you have one) **Gallafent & Co**
"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode) **9 Staple Inn**
London WC1V 7QH

Patents ADP number (if you know it) **0000729001**

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a) any applicant named in part 3 is not an inventor, or
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Description 8

Claim(s) 2

Abstract 1

Drawing(s) 4

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Statement of inventorship and right to grant of a patent (Patents Form 7/77) 3

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I/We request the grant of a patent on the basis of this application.

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Date

31.5.02

12. Name and daytime telephone number of person to contact in the United Kingdom

R J Gallafent 020 7242 3094

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- 1 -

APPARATUS FOR MAKING EXPRESSO COFFEE

This invention relates to apparatus for making expresso coffee.

5 Coffee is globally one of the world's most widely consumed beverages. It is normally drunk hot and it is made by extracting soluble components using hot water from so-called ground coffee, i.e. a granular powder formed by grinding roasted coffee beans. It is well-known that the taste of the coffee varies substantially even with identical ground coffee as the starting material
10 depending upon the precise conditions under which the extraction is carried out. One known widely used method is to pass a relatively small quantity of hot water through a compacted block of coffee grounds under relatively high pressure in order to force the water through the block. This results in a quantity of so-called expresso coffee which is the type of coffee beverage
15 preferred by many users.

In order to produce expresso coffee, e.g. in a café or restaurant, it is common to use for this purpose a counter-top size so-called "expresso machine". These machines are generally provided with a plumbed-in water
20 supply and include means for maintaining a reservoir of water at a relatively high temperature as well as complex systems for expelling a measured quantity of that hot water via a block of compressed ground coffee. That

block is held tightly against a pressurised water outlet of the machine by means of a cylindrical metal pot in which the block is compressed. The pot is provided with means to hold it sealed tightly against the pressurised water outlet, conventionally by way of short thread portions on the exterior
5 of the pot engaging corresponding formations in a skirt surrounding the outlet. The pot is usually provided with a laterally extending exterior handle enabling the pot to be screwed tightly into position by turning through around 90°. The base of the pot contains an aperture through which the coffee may pass to drop into a cup placed below the pot during dispensing,
10 which may be bifurcated to divide the outflow into two streams each of which then drops into a cup placed below the pot.

Apparatus of this sort provided for café and restaurant use is of substantial size and usually requires plumbing into a water system and is accordingly
15 not ideally suited for domestic use. Scaled down such apparatus has been manufactured for many years, but such apparatus has conventionally required an electrical supply and has embodied suitable means for generating hot water under pressure and expelling a quantity of it through the pot containing the compressed block of coffee grounds.

20 We have now found that, by careful design, it is possible to produce excellent espresso coffee using apparatus that is simple in operation, requires no electricity supply, and which can be produced in quantity relatively inexpensively, thus further extending the market for domestic
25 espresso coffee-making apparatus.

According to the present invention, there is provided apparatus for making espresso coffee comprising a support frame, a vertically mounted open-topped cylinder mounted on the support frame, the frame and cylinder
30 defining a space below the cylinder into which a cup may be inserted, means for attaching to the base of the cylinder a pot for containing a quantity of ground coffee, a piston adapted to fit in the cylinder, and a pair of levers pivoted to the frame and pivotally linked to the piston enabling the

piston to be moved up and down in the cylinder by actuation of the levers.

Preferably the levers are mounted 180° apart relative to the axis of the cylinder and movable from an elevated position in which the piston is
5 located at or near the top of the cylinder to a lowered position in which the piston abuts the base of the cylinder.

To use such apparatus, the user first places a quantity of ground coffee in a pot which may be one of the standard conventional designs with one or
10 more outlets to direct coffee into one or more cups. The pot is then fitted underneath the cylinder in conventional fashion and the desired number of cups are placed beneath it. The cylinder is then filled with hot water and the hot water then expressed from the cylinder by means of the piston actuated by moving the two levers. The movement of the levers is under
15 the control of the user and can be controlled accordingly to expel the hot water from the cylinder through the block of compressed ground coffee relatively slowly at a relatively low pressure, or relatively fast at a considerably higher pressure. The taste of the resulting coffee differs and accordingly the user can operate the apparatus to suit his or her taste.

20 In operation, as noted above, it is necessary to fill the cylinder with hot water. This can be achieved by any convenient means provided that the piston can be removed from the top of the cylinder, but it is preferred to provide, associated with the piston, means for enabling water to pass the
25 head of the piston as the piston is raised within the cylinder by actuation of the levers. This may be achieved, for example, by means of an appropriate one way valve mounted in the piston. Such a valve should be easy to operate, easy to clean, and capable of withstanding the substantial back pressure exerted as the hot water in the cylinder is expelled under pressure
30 through the compressed block of ground coffee.

In a particularly preferred embodiment, this valve mechanism is achieved by constructing the piston with an axially movable seal ring located between

the exterior periphery of the piston and the internal cylindrical wall of the cylinder, the seal ring being held captive between a pair of axially spaced flanges on the piston, the axial spacing between the flanges exceeding the axial dimension of the seal ring, and the arrangement being such that when
5 the seal ring is adjacent the lower flange on the piston, flow channels formed therein are open and wherein those flow channels are closed when the seal ring is adjacent the upper flange.

It is found that this is a particularly simple and effective way of providing a
10 valve in the piston, particularly when the seal ring is a resilient o-ring compressed between the exterior of the piston and the interior wall of the cylinder. As the piston is raised within the cylinder, the o-ring rolls to lie adjacent the lower flange opening the flow channels and enabling water
15 above the cylinder to flow through them into the increasing volume between the end of the cylinder and the rising piston. When the piston is moved downwards, the ring rolls to lie adjacent the upper flange and to seal the exterior periphery of the piston tightly against the internal cylindrical wall of the cylinder, thus allowing the application of pressure to the water in the cylinder to express it through the compressed block of ground coffee.

20 Preferably the linkage between the piston and the levers is easily and quickly dismountable so that the piston may be removed entirely from the cylinder to enable it to be cleaned.

25 Other features and advantages of the invention will become clear from the explanation of a particular preferred embodiment of apparatus according to the invention which is shown by way of example in the accompanying drawings. In those drawings:

30 Figure 1 is a perspective view of apparatus for making expresso coffee in accordance with the present invention,

Figure 2 is an exploded view of the apparatus of Figure 1 showing the

various components thereof,

Figure 3 is a perspective view of the piston of the apparatus of Figure 1 inverted, and

5

Figure 4 is a longitudinal section through the centre of the piston.

Referring to the drawings, the apparatus consists generally of a base plate 1 on which is mounted a main body portion 2 in the form of generally
10 arched shape having two downward legs attached to either end of the generally oval base 1 and having at its upper end a cylindrical collar 4 into which is fitted an upwardly open cylinder 3. Mounted to the collar 4 are two actuation levers 6, 7, each of which has as shown in the drawing a generally downward depending arm which bifurcates into two shorter arms,
15 each of which has a transverse bore 8. The collar 4 bears four cylindrical posts 10 and the ends of the levers 6, 7 are relieved to allow the levers to be slipped over posts 10 to bring apertures 8 into line with the central aperture of each post 10. By means of four fixing screws 12 which pass through apertures 8 and into posts 10, levers 6 and 7 may be held captive
20 on to collar 4.

Adjacent the bifurcation in each of levers 6 and 7 is a slot 15 which is adapted to receive one end of a linkage arm 16. Each arm 16 is held pivoted in slot 15 by virtue of a pin (not shown in the drawings) which
25 passes through a transverse bore 18 in each of levers 6 and 7 and a hole 19 at the lower end of each arm 16.

The upper ends of arms 16 are pivotally connected with the upper end of a plunger assembly generally denoted 21 in Figure 1. The plunger assembly
30 is shown in more detail in Figures 3 and 4 and consists of a moulded piston section 22 having an upwardly extending plate 23 moulded integrally therewith. The upper end of section 23 has a pair of slots 25 into which the upper ends of arms 16 may fit being held captive in the slots by a pair of

clip pieces 29 which have inter-engaging posts and pins which, when so inter-engaged, pass through apertures 30 in the top of section 23 and apertures 31 at the top of each arm 16, thus forming a pivotal connection between each arm 16 and the upper section 23 of the piston assembly.

5

When the apparatus is assembled as shown in Figure 1, it can be seen that, when the levers 6 and 7 are raised, assembly 21 is moved so that the piston section 22 lies adjacent the upper end of cylinder 3. By moving levers 6 and 7 downwards, towards the position shown in the exploded view
10 in Figure 2, the plunger assembly 21 may be moved downwards in the cylinder 3.

Piston section 22 is sized so as to enable it to be easily moved up and down in cylinder 3, by moving the levers 6 and 7. In order to seal the
15 outside of the piston section 22 to the interior wall of the cylinder 3, the piston section 22 bears an external o-ring which is shown in the drawings only in Figure 4. In that Figure, the o-ring, denoted 40, is shown on the left-hand side of the Figure adjacent a lower flange 41 moulded on the exterior periphery of the piston section 22 and on the right-hand side of Figure 4
20 against an upper flange 42, likewise integrally moulded. When the piston is being pulled up inside the cylinder 3, o-ring 40 moves to the position shown on the left in Figure 4. When the piston is moved down inside cylinder 3, the o-ring 40 rolls to adopt the position shown on the right-hand side of Figure 4.

25

As shown most clearly in Figure 3, the lower portion of the piston section 22 (shown uppermost in Figure 3 where assembly 21 is shown inverted) is in the form of a hollow skirt with internal radial reinforcing ribs 45. Around the periphery of the skirt are seven apertures 47 which extend from the bottom
30 of the piston section 22 as shown in Figure 4 approximately half-way up the space between flanges 41 and 42.

When the o-ring 40 is in the position shown on the left-hand side of Figure

4, there are spaces accordingly enabling water to pass between the side of the piston and the wall of cylinder 3 through apertures 47 and into the space below piston 22. When the piston is lowered, however, o-ring 40 moves to the position shown on the right of Figure 4, thus constituting a complete seal around the entire periphery of the piston section 22, so enabling water to be expressed under pressure from the cylinder. In order to assist the flow of water downwardly past the piston section 22 as it is raised within cylinder 3, the upper edge of the piston section 22 is relieved by a set of notches 49.

10

As shown in the exploded diagram in Figure 2, the base of cylinder 3 has locking formations 14 thereon which are adapted to engage in a bayonet-fitting fashion with a number of projections located internally of collar 4 so that cylinder 3 may be held fast against axial movement in collar 4, but, for example, may easily be removed for cleaning.

15

Also located as a press-fit internally of collar 4 is a rubber perforated diaphragm 50 which serves to act additionally as a seal between the lower edge of cylinder 3 and the upper edge of a conventional handled pot for containing a portion of ground coffee which is shown in Figure 1. The pot consists of a main section 60 having a pair of tags 61 for engagement internally of collar 4 with appropriately shaped formations therein. A handle 62 may be firmly grasped and swivelled to rotate the pot 60 about its axis firmly to bring the upper edge of the pot into contact with the lower face of diaphragm 50 and accordingly seal the cylinder 3 against the pot 60. The base of the pot 60 has apertures through which the freshly-made coffee may pass to an appropriate outlet in the base of pot 60.

20

25

Finally, base 1 has an external rim 70 to contain any spillage and on its floor a series of raised ribs 71 which serve to hold a cup placed on base 1 out of contact with the upper side of base 1 and accordingly unlikely to pick up any liquid which may have dropped on to the base during use of the apparatus.

30

Use of the apparatus is straightforward:

First of all, a pot 60 is filled with an appropriate quantity of ground coffee and fitted into place in conventional fashion by lifting and twisting. At this stage, the levers 6 and 7 are in their downward position, i.e. not as shown in Figure 1, and the piston section 22 is adjacent the base of cylinder 3. Water is now poured into the top of cylinder 3, for example from a conventional electric kettle. When the cylinder is filled to the desired degree, and it need not be filled fully if the user desires a smaller cup of coffee than the capacity of cylinder 3, levers 6 and 7 are then moved upwards. Via arms 16, this raises the plunger assembly 21 and because, as the movement starts, o-ring 40 moves to the position shown on the left-hand side of Figure 4, the water now flows from above the piston section 22 to below it. This is achieved simply and effectively and the apparatus is then in the position shown in Figure 1. From that position, levers 6 and 7 are pressed downwards and, at the start of that motion, communicated via arms 16 to the plunger assembly 21, o-ring 40 shifts to the position shown on the right-hand side of Figure 4, thus sealing the piston section 22 against the interior wall of cylinder 3 and now enabling the water to be expelled under pressure from cylinder 3 by continued downward pressure on levers 6 and 7. Provided that the coffee grounds are tightly packed and the seal using diaphragm 50 is well-made, quite substantial pressure is required on the arms which translates into a substantial water pressure above the compacted grounds. The freshly-made coffee passes through the compacted grounds in pot 60 and emerges underneath pot 60 to drop into a waiting cup.

To make another cup, handle 62 is swivelled to release pot 60, the used grounds removed, fresh grounds inserted and the process repeated. It is quick, simple, elegant and makes an excellent cup of espresso coffee.

CLAIMS

1. An apparatus for making espresso coffee comprising a support frame, a vertically mounted open-topped cylinder mounted on the support frame, the
5 frame and cylinder defining a space below the cylinder into which a cup may be inserted, means for attaching to the base of the cylinder a pot for containing a quantity of ground coffee, a piston adapted to fit in the cylinder, and a pair of levers pivoted to the frame and pivotally linked to the piston enabling the piston to be moved up and down in the cylinder by actuation of
10 the levers.
2. An apparatus for making espresso coffee according to Claim 1 wherein the levers are mounted 180° apart relative to the axis of the cylinder and movable from an elevated position in which the piston is located at or near
15 the top of the cylinder to a lowered position in which the piston abuts the base of the cylinder.
3. An apparatus for making espresso coffee according to Claim 1 or 2 wherein associated with the piston is a means for enabling water to pass
20 the head of the piston as the piston is raised within the cylinder by actuation of the levers.
4. An apparatus for making espresso coffee according to Claim 3 wherein the means for enabling water to pass the head of the piston is an axially
25 movable seal ring located between the exterior periphery of the piston and the internal cylindrical wall of the cylinder, the seal ring being held captive between a pair of axially spaced flanges on the piston, the axial spacing between the flanges exceeding the axial dimension of the seal ring, and the arrangement being such that when the seal ring is adjacent the lower flange
30 on the piston, flow channels formed therein are open and wherein those flow channels are closed when the seal ring is adjacent the upper flange.
5. An apparatus for making espresso coffee according to Claim 4 wherein

the seal ring is a resilient o-ring compressed between the exterior of the piston and the interior wall of the cylinder.

6. An apparatus for making espresso coffee according to any of claims 1
5 to 5 wherein the linkage between the piston and the levers is easily and quickly dismountable so that the piston may be removed entirely from the cylinder to enable it to be cleaned.
-

ABSTRACT

APPARATUS FOR MAKING EXPRESSO COFFEE

5 An apparatus for making expresso coffee is described. The apparatus comprises a support frame (2) upon which an open-topped cylinder (3) is vertically mounted. A pot (60) containing a quantity of ground coffee may be attached to the base of the cylinder, and the frame (2) and cylinder (3) provide sufficient space to insert a cup or cups below the pot (60). A piston
10 (22) is adapted to fit in the cylinder (3) and a pair of levers (6, 7) pivoted to the frame and pivotally linked to the piston enable the piston to move up and down in the cylinder (3) by actuation of the levers (6, 7). In use, hot water is poured into the cylinder (3) and downward pressure on the levers (6, 7) expels the hot water under pressure through the ground coffee and
15 the freshly made coffee passes out of an outlet in the base of the pot (60) and into a waiting cup.

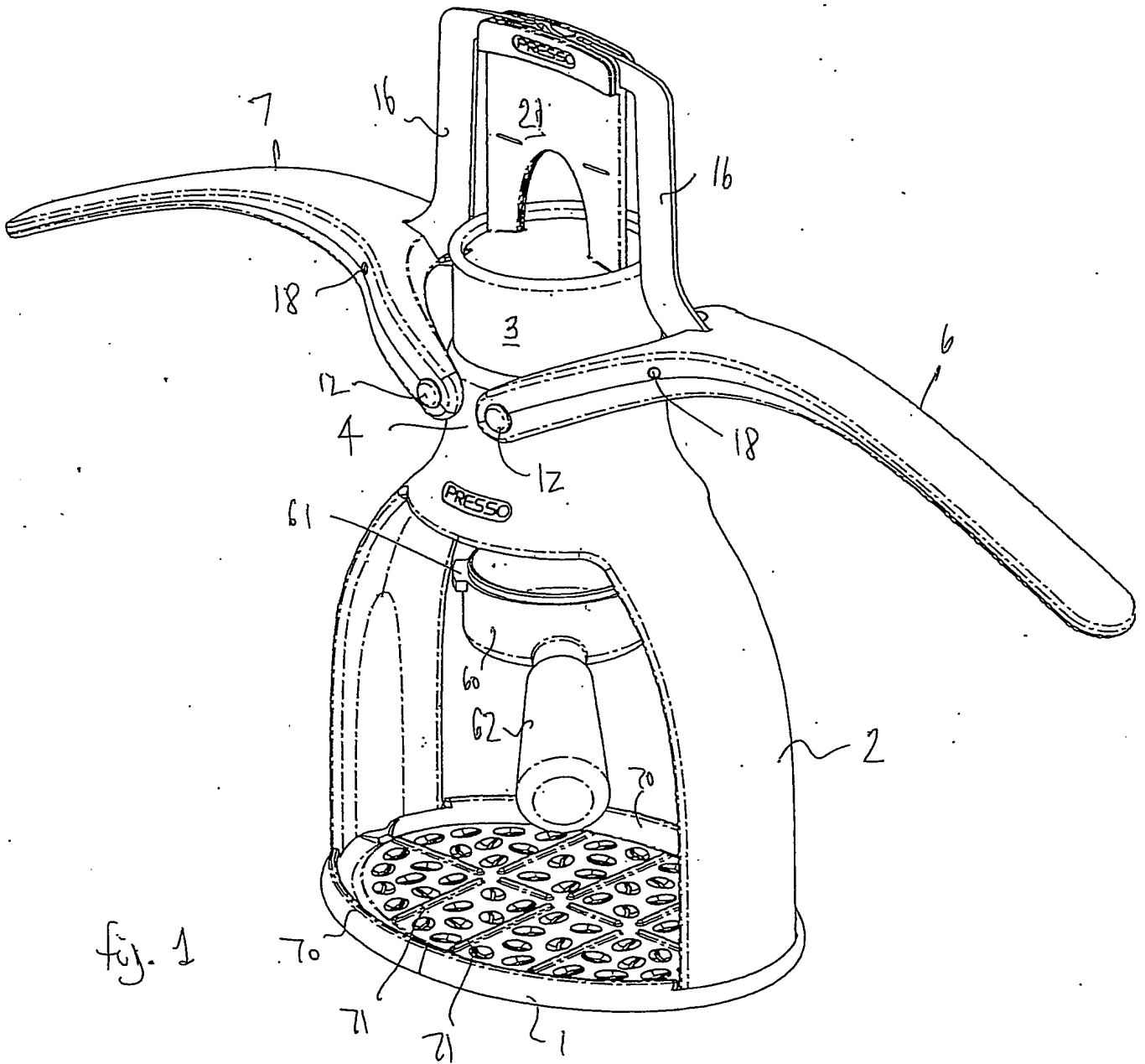
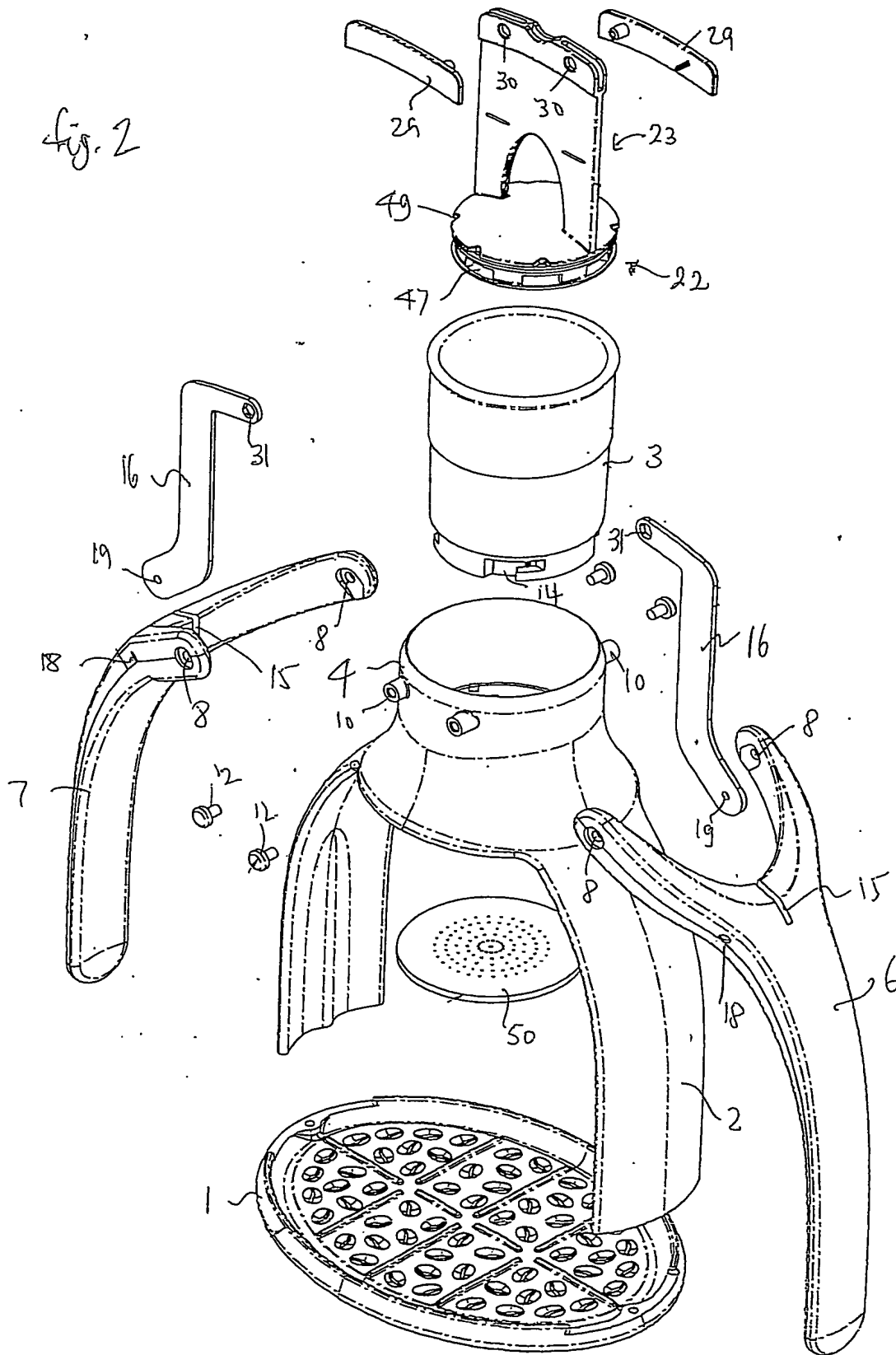


fig. 2



3/4

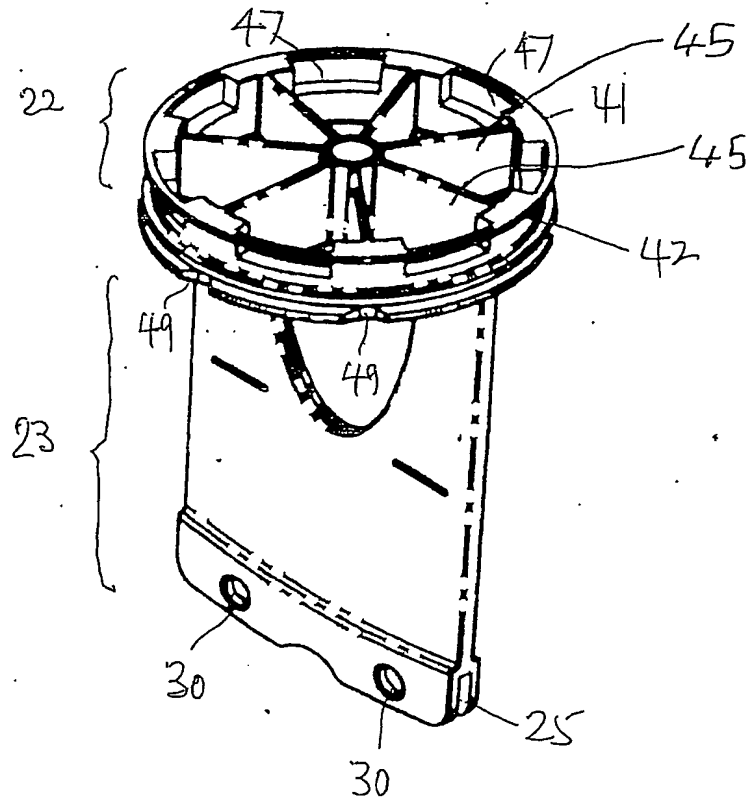


Fig. 3

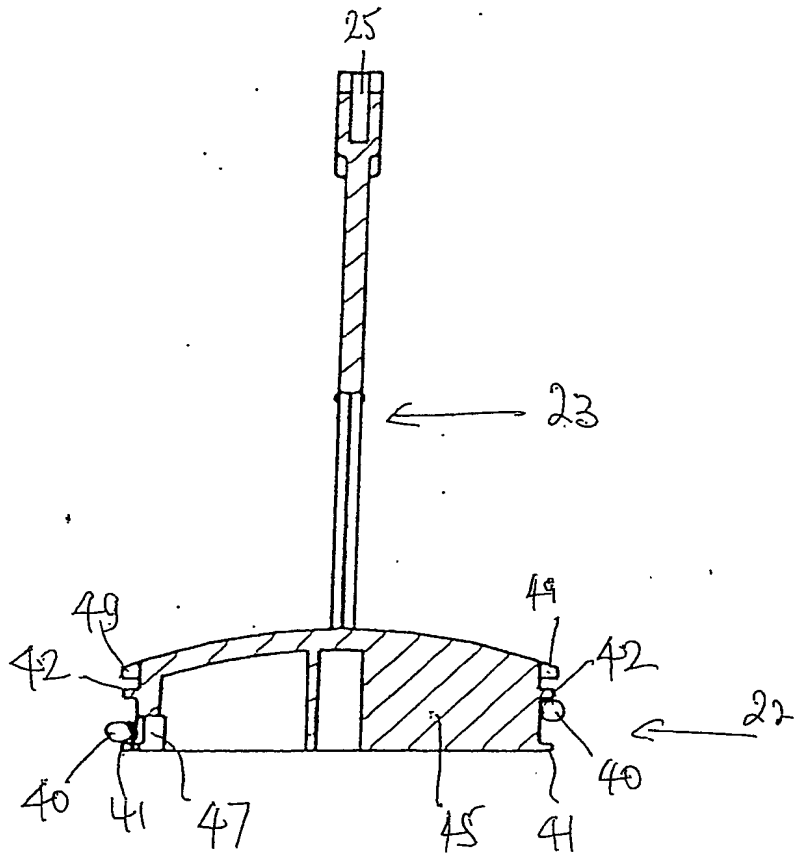


Fig. 4